Snow and Ice Control Plan

Ted Stevens Anchorage International Airport

Original Date_____

Revision Date_____

FAA Approval _____

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Phase #1

Pre- and Post-Winter Season Topics

Chapter 1. Pre-Season Actions

1.1 Airport Preparation

a) Airport Management Meetings

The Airfield Maintenance (AFM) Manager or Assistant will initiate a meeting, in October to discuss equipment and material inventory, repair needs, staffing, budget, training, previous years issue's, and any other topics associate with snow and ice control and its plan. Aircraft deicing forms with chemical handling and reporting instructions for tenants will be available.

b) Personnel Training

All AFM personnel receive annual, recurrent snow removal training. Training records are maintained by the department. Personnel receive classroom training on the snow and ice control procedures. Equipment Operators practice simulated snow and ice control exercises.

c) Equipment Preparation

The airports electronic decelerometer will be calibrated, updated and certified each year in May or June. Beginning at the end of the snow season mechanics will begin to inspect and prepare each piece of snow removal equipment. Required fluids, replacement parts, and snow removal equipment components will be inventoried and stockpiled.

1.2 Snow and Ice Control Committee (SICC) Meetings.

The Airport has developed a SICC to provide feedback and make recommendations to snow and ice removal operations and SICP updates at Anchorage International. The SICC is chaired by the Airfield Maintenance Manager or Assistant and includes Facilities, Operations, Police and Fire, Federal Aviation Administration Air Traffic Control Tower (ATCT), tenants and users.

During the month of September the Airport will begin notifying tenants and airport users to review and provide comments to be discussed at the season kick-off meeting in October.

The following topics may be discussed in the SICC:

- Airport Clearing Operations Discussion Topics
  - Areas Designated as Priority I areas, and any new airfield infrastructure
  - Clearing operations and follow-up airfield assessments
  - Potentials for pilot or vehicular runway incursions or incidents
  - Staff requirements and qualifications (training)
  - Response time to keep runways, taxiways and apron areas operational
  - Communication, terminology, frequencies, and procedures
  - Monitoring and updating of runway surface conditions
  - Issuance of NOTAMS and dissemination to ensure timely notification
  - Equipment inventory
  - Procedures for storm water runoff mitigation
  - Snow hauling/disposing, snow dumps
  - New runoff requirements for containment or collection

- Air Carrier Ground Deicing/anti-icing programs
  - Carriers Notify ATCT of deicing and amount of hold over times to minimize repeated deicing.
  - Parking Spot Romeo 7 may be closed to allow remote deicing for carriers that will require it closer to the departing runways.

- Accidents/Releases

  Unintentional releases of glycol used for deicing purposes are considered reportable spills. Report all accidental/unintentional releases to any of the following numbers:

Airport Environmental	266-2546
Airport Dispatch	266-2411
Airport Operations	266-2600

Chapter 2. Post-Event/Season Actions

2.1 Post Event.

ANC can have up to 50 events each season and it isn't feasible to have a meeting after each event. Topics are discussed in AFM staff meetings and shared with other departments if necessary through airport wide staff meetings. ANC staff also attend periodic user meetings and discuss winter operation issues.

2.2 Post Season.

The Airport has developed a SICC to provide feedback and recommendations to snow and ice removal operations and SICP updates at Anchorage International. The SICC is chaired by the Airfield Maintenance Manager or Assistant and includes Facilities, Operations, Police and Fire, Federal Aviation Administration Air Traffic Control Tower (ATCT), tenants and users. This meeting is held in the month of May or June.

Phase #2

Winter Storm Actions and Procedures

Chapter 3. Snow Removal Action Criteria

3.1 Activating Snow Removal Personnel.

ANC employs enough equipment operators and operations personnel for a 24/7 operation

a) Weather Forecasting

Airport 10 and MX-1 will continuously monitor airfield conditions, local radar, weather patterns/predictions and ATCT radio traffic for pilot reports and braking action reports to anticipate a need for snow removal operations. ANC also uses pavement sensors that are monitored by computer and ground temperature sensors in the MX-1 vehicles.

b) Triggers for Initiating Snow Removal Operations

Snow removal will commence upon receipt of either snow or ice accumulation on the runway and taxiway surfaces, or sooner if weather conditions are expected to develop. ANC Operations will notify ANC ATCT, and publish required NOTAMs. Airfield Maintenance will conduct snow removal operations to keep ANC operational.

Precipitation	Depth in Inches
Slush	Trace
Wet Snow	Trace
Dry Snow	Trace
Ice or Freezing Rain	Trace

3.1 Airfield Clearing Priorities.

Priorities for snow and ice control are established in accordance with existing requirements and regulations governing the operations of ANC, to include FAR Part 139, current FAA Advisory Circulars and the Airport Certification Manual. Priorities are established to ensure safety of aircraft during landing, takeoff, and taxiing movements, as well as accessibility to operational areas. ANC snow removal priorities are shown graphically in Figure 1. The ARFF station is cleared by the ARFF crews. The glideslopes for runways 7L&R and 15 will be monitored for snow depth and cleared when it reaches 18 inches of snow accumulation. Weather patterns may dictate changes in the Priority 1 runways and taxiways

a) Priority 1

- Runway 7L
- Taxiway Golf
- Taxiway Echo
- Taxiway Delta
- Taxiway Kilo
- Taxiway Romeo
- Taxiway Echo

b) Priority 2

- Runway 7R
- Runway 33
- Taxiway Lima
- Ramps
- Lead in lines to north and south terminals
- Lima and Alpha concourse parking
- Ground support access roads
- All other taxiways not in priority 1

3.2 Airfield Clearance Times.

Clearance times may vary during a snow or ice event depending on the severity and accumulation of contaminants. The clearance time for the Priority 1 is 30 minutes. At times it may be necessary to only sweep partial width of runways and taxiways to achieve this 30 minute clearance time.

Table 1-1. Clearance Times for Commercial Service Airports

Annual Airplane Operations (includes cargo operations)	*Clearance Time*[1] *(hour)*
40,000 or more	*½*
10,000 – but less than 40,000	*1*
6,000 – but less than 10,000	*1½*
Less than 6,000	*2*
General: Commercial Service Airport means a public-use airport that the U.S. Secretary of Transportation determines has at least 2,500 passenger boardings each year and that receives scheduled passenger airplane service [reference Title 49 United States Code, Section 47102(7)].	
Footnote 1: These airports should have sufficient equipment to clear 1 inch (2.54 cm) of falling snow weighing up to 25 lb/ft³ (400 kg/m³) from Priority 1 areas within the recommended clearance times.	

3.3 Snow Equipment List.

See Figure 3

3.4 Storage of Snow and Ice Control Equipment.

Snow Removal Equipment is stored in the following locations.

- AFM Warm Storage
- Quick Turn Facility
- AFM Annex Warm Storage

At times some equipment will be stored outside if equipped with an engine heater.

3.8 Definitions.

Approved Chemical.
A chemical, either solid or liquid, that meets a generic SAE or MIL specification.

Ash.

A grayish-white to black solid residue of combustion normally originating from pulverized particulate matter ejected by volcanic eruption.

Compacted Snow.

Snow that has been compressed and consolidated into a solid form that resists further compression such that an airplane will remain on its surface without displacing any of it. If a chunk of compressed snow can be picked up by hand, it will hold together or can be broken into smaller chunks rather that falling away as individual snow particles.

Note: A layer of compacted snow over ice must be reported as compacted snow only.

Example: When operating on the surface, significant rutting or compaction will not occur. Compacted snow may include a mixture of snow and embedded ice; if it is more ice than compacted snow, then it should be reported as either ice or wet ice, as applicable.

Contaminant.

A deposit such as frost, any snow, slush, ice, or water on an aerodrome pavement where the effects could be detrimental to the friction characteristics of the pavement surface.

Contaminated Runway.

For purposes of generating a runway condition code and airplane performance, a runway is considered contaminated when more than 25 percent of the runway surface area (within the reported length and the width being used) is covered by frost, ice, and any depth of snow, slush, or water.

When runway contaminants exist, but overall coverage is 25 percent or less, the contaminants will still be reported. However, a runway condition code will not be generated.

While mud, ash, sand, oil, and rubber are reportable contaminants, there is no associated airplane performance data available and no depth or Runway Condition Code will be reported.

Exception: Rubber is not subject to the 25 percent rule, and will be reported as Slippery When Wet when the pavement evaluation/friction deterioration indicates the averaged Mu value on the wet pavement surface is below the Minimum Friction Level classification specified in Table 3-2 of FAA Advisory Circular 150/5320-12.

Dry (Pavement).

Describes a surface that is neither wet nor contaminated.

Dry Runway.

A runway is dry when it is neither wet, nor contaminated. For purposes of condition reporting and airplane performance, a runway can be considered dry when no more than 25 percent of the runway surface area within the reported length and the width being used is covered by:

Visible moisture or dampness, or

Frost, slush, snow (any type), or ice.

A FICON NOTAM must not be originated for the sole purpose of reporting a dry runway. A dry surface must be reported only when there is need to report conditions on the remainder of the surface.

Dry Snow.

Snow that has insufficient free water to cause it to stick together. This generally occurs at temperatures well below 32° F (0° C). If when making a snowball, it falls apart, the snow is considered dry.

Eutectic Temperature/Composition.

A deicing chemical melts ice by lowering the freezing point. The extent of this freezing point depression depends on the chemical and water in the system. The limit of freezing point depression, equivalent to the lowest temperature that the chemical will melt ice, occurs with a specific amount of chemical. This temperature is called the eutectic temperature, and the amount of chemical is the eutectic composition. Collectively, they are referred to as the eutectic point.

FICON (Field Condition Report).

A Notice to Airmen (NOTAM) generated to reflect Runway Condition Codes, vehicle braking action, and pavement surface conditions on runways, taxiways, and aprons.

Fluid Deicer/Anti-Icers. The approved specification is SAE AMS 1435, Fluid, Generic Deicing/Anti-icing, Runways and Taxiways.

Frost.

Frost consists of ice crystals formed from airborne moisture that condenses on a surface whose temperature is below freezing. Frost differs from ice in that the frost crystals grow independently and therefore have a more granular texture.

Note: Heavy frost that has noticeable depth may have friction qualities similar to ice and downgrading the runway condition code accordingly should be considered. If driving a vehicle over the frost does not result in tire tracks down to bare pavement, the frost should be considered to have sufficient depth to consider a downgrade of the runway condition code.

Generic Solids. The approved specification is SAE AMS 1431, Compound, Solid Runway and Taxiway Deicing/Anti-Icing.

Ice.

The solid form of frozen water to include ice that is textured (i.e., rough or scarified ice).

A layer of ice over compacted snow must be reported as ice only.

Layered Contaminant.

A contaminant consisting of two overlapping contaminants. The list of layered contaminants has been identified in the RCAM and include:

- Dry Snow over Compacted Snow
- Wet Snow over Compacted Snow
- Slush over Ice
- Water over Compacted Snow
- Dry Snow over Ice
- Wet Snow over Ice

Mud.

Wet, sticky, soft earth material.

Multiple Contaminants.

A combination of contaminants (as identified in the RCAM) observed on paved surfaces. When reporting multiple contaminants, only the two most prevalent / hazardous contaminants are reported. When reporting on runways, up to two contaminant types may be reported for each runway third. The reported contaminants may consist of a single and layered contaminant, two single contaminants, or two layered contaminants. The reporting of "multiple contaminants" represent contaminants which are located adjacent to each other,

not to be confused with a "layered contaminant" which is overlapping. For example:

- Single contaminant and Layered contaminant.
  'Wet' and 'Wet Snow over Compacted Snow'
- Single contaminant and Single contaminant.
  'Wet Snow' and 'Slush'
- Layered contaminant and Layered contaminant.
  'Dry Snow over Compacted Snow' and 'Dry Snow over Ice'

Oil.
A viscous liquid, derived from petroleum or synthetic material, especially for use as a fuel or lubricant.

Runway (Primary and Secondary).

Primary.
Runway(s) being actively used or expected to be used under the existing or anticipated adverse meteorological conditions, where the majority of the takeoff and landing operations will take place.

Secondary.
Runway(s) that supports a primary runway and is less operationally critical. Takeoff and landing operations on such a runway are generally less frequent than on a primary runway. Snow removal operations on these secondary runways should not occur until Priority 1 surfaces are satisfactorily cleared and serviceable.

Runway Condition Assessment Matrix (RCAM).
The tool by which an airport operator will assess a runway surface when contaminants are present.

Runway Condition Code (RwyCC).
Runway Condition Codes describe runway conditions based on defined contaminants for each runway third. Use of RwyCCs harmonizes with ICAO Annex 14, providing a standardized "shorthand" format (Eg: 4/3/2) for reporting. RwyCC (which replaced Mu values) are used by pilots to determine landing performance calculations.

Sand.
A sedimentary material, finer than a granule and coarser than silt.

Slush.

Snow that has water content exceeding a freely drained condition such that it takes on fluid properties (e.g., flowing and splashing). Water will drain from slush when a handful is picked up. This type of water-saturated snow will be displaced with a splatter by a heel and toe slap-down motion against the ground.

Slush over Ice.

See individual definitions for each contaminant.

Slippery When Wet Runway.

A wet runway where the surface friction characteristics would indicate diminished braking action as compared to a normal wet runway.

Slippery When Wet is only reported when a pavement maintenance evaluation indicates the averaged Mu value on the wet pavement surface is below the Minimum Friction Level classification specified in Table 3-2 of FAA Advisory Circular 150/5320-12. Some contributing factors that can create this condition include: Rubber buildup, groove failures/wear, pavement macro/micro textures.

Water.

The liquid state of water. For purposes of condition reporting and airplane performance, water is greater than 1/8-inch (3mm) in depth.

Wet Runway.

A runway is wet when it is neither dry nor contaminated. For purposes of condition reporting and airplane performance, a runway can be considered wet when more than 25 percent of the runway surface area within the reported length and the width being used is covered by any visible dampness or water that is 1/8-inch or less in depth.

Wet Ice.

Ice that is melting, or ice with a layer of water (any depth) on top.

Wet Snow.

Snow that has grains coated with liquid water, which bonds the mass together, but that has no excess water in the pore spaces. A well-compacted, solid snowball can be made, but water will not squeeze out.

Chapter 4. Snow Clearing Operations and Ice Prevention

4.1 Snow Clearing Principals.

a) Ramp and Terminal

Tenants are responsible to push the snow away from the terminal and pile it in a designated spot. ANC will remove the snow when cleanup begins or when it accumulates too much for aircraft passage. The cargo spots will be cleared by ANC after coordinating through Airport 10. Snow disposal, use of sand for tenant ramps, compliance and enforcement are described in ANC's current Airport Operations Manual.

Stockpiles and snow dumps are shown on the snow disposal site map which is listed as Figure 2. The snow piles near the terminal from the tenants will be removed during cleanup. Snow stockpiles must be limited in height to allow for unobstructed view and maneuvering of aircraft.

b) Runway and Taxiways

ANC normally utilizes 6 plow and broom trucks along with a blower to clear the windrow from the plow/broom trucks. They begin at the runway centerline and make one pass down and then one pass back.

c) Snowbanks

Snow bank heights will meet the profiles defined in the current Airport Winter Safety and Operations AC 150/5200-30.

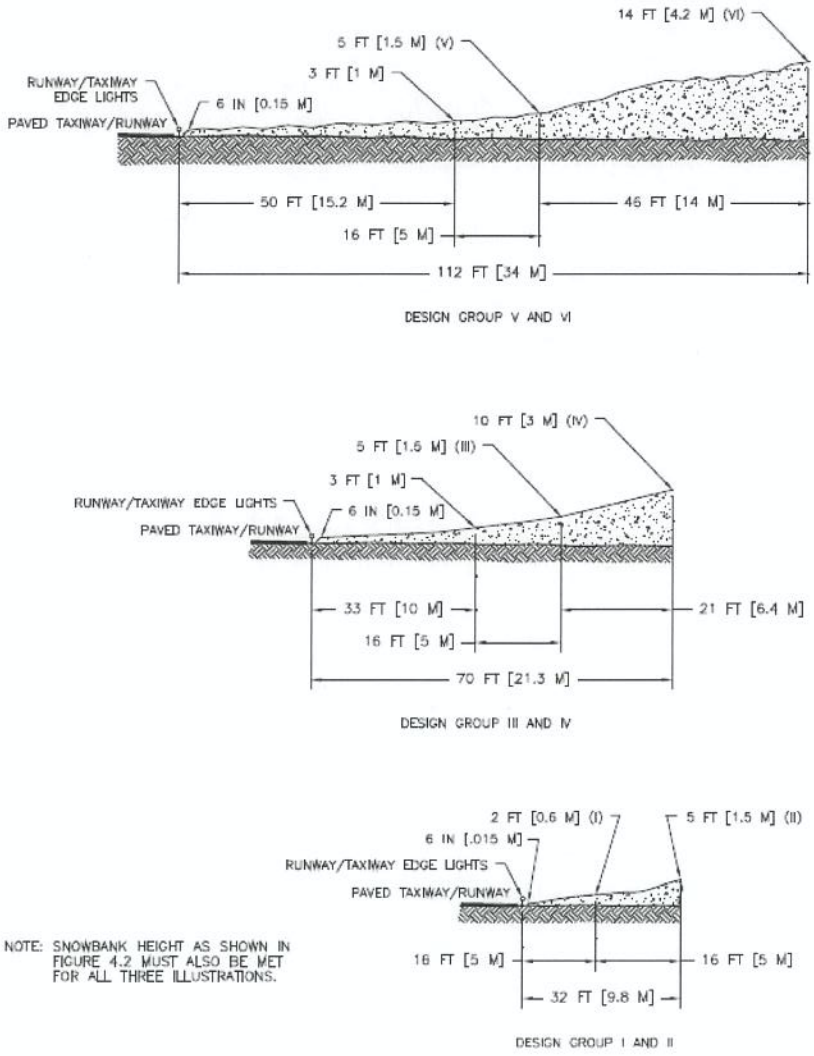
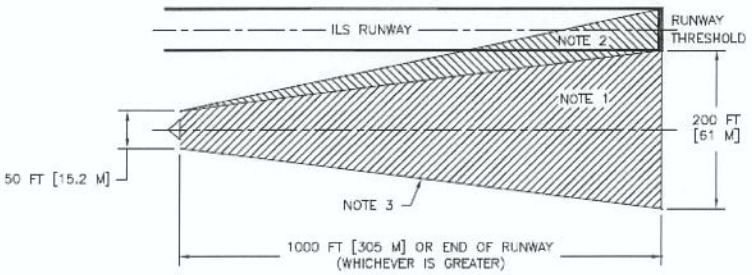


Figure 4-1. Snow Bank Profile Limits Along Edges of Runways and Taxiways with the Airplane Wheels on Full Strength Pavement (see Figure 4-2 guidance)

d) NAVAIDs

ILS glideslopes are monitored during snowfall events to ensure snow depth will not affect published approach minimums. (See Snow Removal Priority map) If the snow reaches the depth described in current FAA AC's, the 7L and 7R glideslopes will be cleared alternately to keep from interrupting traffic. Other closures will be coordinated with the FAA and ATCT 24 hours in advance and will be done during low traffic times. Other NAVAIDS and weather equipment are the responsibility of the FAA. However it may be necessary for ANC to assist in the removal of the snow if requested.



NOTES:

1. CATEGORY I GLIDE SLOPE SNOW CLEARANCE AREA.
2. CATEGORY II AND III GLIDE SLOPE SNOW CLEARANCE AREA. THE AREA DEPICTED UNDER NOTE 1 SHALL ALSO BE CLEARED.
3. THE DEPTH OF SNOWBANKS ALONG THE EDGES OF THE CLEARED AREA SHALL BE LESS THEN 2 FEET.

ACTION TAKEN	SNOW DEPTH		
	SBR <6 IN [15 cm] NR. CEGS <18 IN [45 cm]	SBR 6 TO 8 IN [15 TO 20 cm] NR. CEGS 18 TO 24 IN [45 TO 60 cm]	SBR >8 IN [20 cm] NR. CEGS <24 IN [60 cm]
SNOW REMOVAL (SEE ABOVE FIGURE)	REMOVAL NOT REQUIRED RESTORE FULL SERVICE AND CATEGORY.	ILS CATEGORY I REMOVE SNOW 50 FT [15M] WIDE AT MAST WIDENING TO 200 FT [60M] WIDE AT 1000 FT [300M] OR END OF RUNWAY TOWARD MIDDLE AMRKER. ILS CATEGORIES II AND III AS ABOVE PLUS WIDEN THE AREA TO INCLUDE A LINE FROM THE MAST TO THE FAR EDGE OF RUNWAY THRESHOLD.	
NO SNOW REMOVAL	RESTORE FULL SERVICE AND CATEGORY.	ALL CATEGORIES RESTORE TO CATEGORY I SERVICE. CATEGORY D AIRCRAFT MINIMA RAISED TO LOCALIZER ONLY. TYPICAL NOTAM TEXT: "DUE TO SNOW ON THE IXXX (APPROPRIATE IDENTIFER) GLIDE SLOPE, MINIMA TEMPORARILRY RAISED TO LOCALIZER ONLY FOR CATEGORY D AIRCRAFT" IF APPLICABLE, "CATEGORY II NA"* OR "CATEGORY II/III NA".	ALL CATEGORIES APPROACH RESTRICTED TO LOCALIZER ONLY MINIMA. TYPICAL NOTAM TEXT: "DUE TO SNOW ON THE IXXX (APPROPRIATE IDENTIFER) GLIDE SLOPE, MINIMA TEMPORARILRY RAISED TO LOCALIZER ONLY.

* NA (NOT AUTHORIZED)

Figure 4-2. ILS CAT I and CAT II/III Snow Clearance Area Depth Limitations

4.2 Controlling Snow Drifts.

Snow drifts will be controlled with snow equipment when necessary.

4.3 Snow Disposal.

Stockpiles or snow dumps are shown on the snow disposal site map which is attached. The snow piles that are near the terminal from the tenants will be removed during cleanup. See Figure 2.

4.4 Methods for Ice Control and Removal–Chemicals.

ANC uses potassium acetate liquid deicer applied with deice trucks. ANC uses 3 different solid deicers, NAAC, sodium formate and sodium formate/acetate blend that are applied by sand trucks.

4.5 Sand (for the purposes of treating a winter surface).

ANC airfield sand meets the FAA gradient requirement (table 4-3) and is tested each year before delivery. Sand is applied with sand trucks and the sand can be applied with heated potassium acetate if required.

Table 4-3. Expanded Sand Gradation Standard

Sieve Designation	Percent by Weight Passing
8	100
30	20-50
80	0-2

4.6 Surface Incident/Runway Incursion Mitigation Procedures.

Movement area training is completed each year for every member of the snow removal team as part of Part 139 compliance. Movement area procedures and incidents are reviewed during this training. Incursions are reviewed in the pre-season winter briefing held each year in September/October. Vehicles are marked and lighted in accordance with current FAA AC's.

a) Radio Communication

All vehicles are equipped with ground to air radio for maintaining contact with ATCT and a company radio for contact between the ground crews. MX-1 and the lead plow communicate with ATCT during snow removal operations IAW ANC's current Letter of agreement with the Anchorage Air Traffic Control Tower.

b) Failed Radio Communication

The company radio is available to contact Airport 10 or MX-1 in the event of an ATCT radio malfunction and MX-1 has a cellular phone that could be used to contact tower.

c) Low Visibility and Whiteout Conditions

During low visibility or whiteout conditions the airport's SMGCS plan is implemented.

d) Driver Fatigue

ANC limits the time an operator can be on duty to 4 hours before or 4 hours after a regular 7.5 hour shift.

Chapter 5.Surface Assessment and Reporting

5.1 Conducting Surface Assessments:

a) Whenever a runway is contaminated by ice, snow, slush or standing water ANC will assess and provide current runway condition reports to air carriers in a timely manner. ANC will measure and report surface conditions IAW current FAA Advisory Circulars.

b) ANC will notify air carriers and tenants of field conditions using the NOTAM system IAW current FAA Orders and ACs. Contact the Duty Manager, Airport 10, 24/7 with any questions the current airport condition at 907-266-2600 or 907-748-2600.

c) ANC uses an electronic decelerometer as its primary friction tester with backed up with a manual Tapley meter. The field also has in-pavement sensors to indicate the conditions on various places on the field. The MX1 trucks are also fitted with pavement and ambient temperature sensors.

5.2 Applying the Runway Condition Assessment Matrix (RCAM).

a) Determining Runway Conditions

ANC determines runway conditions during airfield inspections using the following variables:

1. Contaminant types and coverage
2. Contaminant depth
3. Contaminant layers, if applicable
4. Outside Ambient Temperature (OAT)
5. Friction measurements, if applicable

Step 1: Runway Condition Code (RwyCC) Applicability:

If **25 percent or less** of the overall runway length and width or cleared width is covered with contaminants, the airport inspector will simple report the contaminant percentage, type and depth for each third of the runway, to include any associated treatments or improvements. RwyCCs will not be applied, or reported.
Or

If the overall runway length and width coverage or cleared width is **greater than 25 percent**, RwyCCs will also be assigned and reported, informing airplane operators of the contaminant present, and associated codes for each third of the runway. (The reported codes, will serve as a trigger for all airplane operators to conduct a takeoff and/or landing performance assessment).

Step 2: Apply Assessment Criteria

The NOTAM Manager system will assign a RwyCC, if required, from the RCAM based on the contaminants and coverage observed for each third of the runway.

Step 3: Validating Runway Condition Codes

If the observations by the airport inspector determine that RwyCCs assigned accurately reflect the runway conditions and performance, no further action is necessary, and Airport Operations will disseminate the required NOTAM.

b) Downgrade Assessment Criteria
The RwyCC(s) may need to be downgraded when observations indicate a more slippery condition than generated by the RCAM. When applicable, the downgrade of RwyCCs may be based on friction (μ) readings, vehicle control or pilot reported braking action or temperature. The Duty Manager and/or Field Maintenance Foreman will confirm the need to downgrade the RwyCC(s) and Airport Operations will publish or update the NOTAM.

NOTE: Temperatures near and above freezing (e.g., at negative 26.6° F (-3° C) and warmer) may cause contaminants to behave more slippery than indicated by the runway condition code given in the RCAM. At these temperatures, operations and field maintenance personnel will exercise a heightened awareness of airfield conditions. If the runway conditions degrade, Operations will downgrade the RwyCCs or close the runway, if appropriate.

c) Upgrade Assessment Criteria Based on Friction Assessments.
RwyCCs of 0 or 1 may only be upgraded when the following requirements are met.

1. Airport 10 will confirm all observations, judgment, and vehicle braking action support the higher RwyCC, and

MX-1 will confirm Mu values of 40 or greater for the affected third(s) of the runway by a calibrated friction measuring device that is operated within allowable parameters.

This ability to raise the reported RwyCC to no higher than a code 3 can only be applied to those runway conditions listed under code 0 and 1 in the RCAM. (See footnote 2 on the RCAM.)

ANC Operations and Field Maintenance personnel will continually monitor the runway surface as long as the higher code is in effect to ensure that the runway surface condition does not deteriorate below the assigned code.

a. Personnel monitoring the runway surface will consider all variables that may affect the runway surface condition, including any precipitation conditions, changing temperatures, effects of wind, frequency of runway use, and type of aircraft using the runway.

b. Personnel monitoring the runway surface will confirm continued effectiveness of the treatment when sand or other approved runway 'treatments are used to satisfy the requirements for issuing the higher runway condition code.

5.3 Runway Friction Surveys, Equipment, and Procedures.

Friction tests will be taken using an electronic or manual decelerometer by each Airfield Maintenance Foreman or another designated employee at the beginning of each shift and as often as required throughout the shift, dependent on weather conditions. Results will be entered and reported through the TRACR II computer based reporting system. A back-up paper form will be utilized to record results if the TRACR II system is not available.

a) Conditions Acceptable to Use Decelerometers or Continuous Friction Measuring Equipment to Conduct Runway Friction Surveys on Frozen Contaminated Surfaces.

The data obtained from such runway friction surveys are only considered to be reliable when the surface is contaminated under any of the following conditions.

- Ice or wet ice.
- Compacted snow at any depth.
- Dry snow 1 inch or less.
- Wet snow or slush 1/8 inch or less.

b) When to Conduct

Friction assessments should be conducted if any of the following occurs:

- When the central portion of the runway, centered longitudinally along the runway centerline, is contaminated 500 feet or more.
- After any type of snow removal operations or chemical application (including sanding)
- Immediately following any aircraft incident or accident on the runway.
- Each shift, unless runway and taxiway surfaces are determined by visual inspection to be dry.

- When there is a significant change in the weather, or as surface conditions change that would indicate poor braking action.
- Each time a runway is cleared of snow.
- When requested by Airport Operations.

c) How to Conduct

- All braking tests will be performed at 20 m.p.h.
- Vehicle brakes will be applied in such a manner as to avoid wheel lockup.
- Tests on runway surfaces will be taken approximately 20 feet either side of centerline.
- Test readings will be taken in each third of runway and averaged for reading on that third and recorded as touchdown, mid-point and rollout.
- Tests of taxiway surfaces will be taken approximately ten (10) to fifteen (15) feet either side of centerline.
- If sand or deicing chemicals are applied to remedy slick areas, a second friction test will be conducted following application.

d) Calibration

The calibration of the electronic decelerometer is done in June by the manufacturer. The mechanical Tapley's are also sent out for calibration. The radio technician and Assistant manager collaborate on the calibration

5.4 Taxiway, Apron, and Holding Bay Assessments.

Assessments to these surfaces will occur when contaminants are present. A friction test may be performed if it is reported that the braking is diminishing. Surfaces will be monitored on a regular basis during periods of active precipitation.

5.5 Surface Condition Reporting.

Airport Operations and Field Maintenance monitor and assess ANC surface conditions using airfield inspections.

The Duty Manager (Airport 10) and the Field Maintenance Foremen during snow season, complete inspections:

1. Once every shift (normally 8 hours) at a minimum
2. When required by changing conditions
3. Following any accident or incident.

Other tools to monitor changing conditions include:

1. FAA Information Dissemination System,IDS4
2. PASSUR OPSnet,
3. National Weather Service observations and forecasts

ANC Operations disseminates information about those conditions in a timely manner to airport users via the NOTAM System using the Digital NOTAM Manager System, as primary, backed up with inputs through Kenai Flight Service and to ANC Air Traffic Control Tower by Air-to-ground radio and phone.

Field Condition NOTAMS, including RwyCCs if required, are published when contaminants are present on the surface and are updated:

1. During an active snow event
2. When actions are taken to improve the surface condition:
    a. Plowing/sweeping
    b. Applying deicing chemicals
    c. Sanding
3. As conditions change
4. Each shift
5. Every 24 hours as a minimum.

Unique reporting conditions:

1. Runway 15/33's safety area overlaps the Runway 7L/25R safety area north of the runway between Taxiways R and Y. Mx-1 or the lead snowplow will coordinate access to this area during continuous snow removal and cleanup operations. If ANC Tower unable to accommodate, Airport Operations will publish NOTAMs to allow access to this area.

2. The term 'DRY' is used to describe a surface that is neither wet nor contaminated. While a FICON NOTAM is not generated for the sole purpose of reporting a dry runway, a dry surface will be reported when there is need to report conditions on the remainder of the surface. (For example: snow is present on the last third of the runway.)

3. Partial width clearing – ANC reports runways cleared less than full width with remainder remarks for the FICON. When the treated area is extended to the full width, a new FICON is published, deleting the remainder remarks.

5.6 Reportable Contaminants without Performance Data.

If present, unable to be removed, and posing no hazard, mud will be reported with a measured depth. Ash, oil, sand, and rubber contaminants will be reported without a measured depth. These contaminants will not generate a RwyCC.

5.7 Slippery When Wet Runway.

For runways where a friction survey (for the purposes of pavement maintenance) indicates the averaged Mu value at 40 mph on the wet pavement surface failed to meet the minimum friction level classification specified in AC 150/5320-12, the airport will report via the NOTAM system a RwyCC of '3' for the entire runway (by thirds: 3/3/3) when the runway is wet.

A runway condition description of 'Slippery When Wet' will be used for this condition.

If it is determined by the airport that a downgrade is necessary, the downgrade will be made to all three runway thirds match (i.e. 3/3/3, 2/2/2, 1/1/1).

The NOTAM will be cancelled when the minimum runway friction level classification has been met or exceeded.

5.8 Requirements for Closures.

Closure of runways will occur when any of the parameters are met in the table.

Precipitation	Depth in Inches
Slush	*1 inch*
Wet Snow	*2 inches*
Dry Snow	*3 inches*
Ice or Freezing Rain	*100% coverage*
Friction	*Below 20*

- After two consecutive "poor" breaking reports received by the Air Traffic Control Tower, the Field Maintenance Foreman or Operations Officer will evaluate the runway.

- Nil Braking Report by Aircraft. When a nil braking pilot report is received from a landing aircraft, action must be taken immediately to insure the safety of subsequent aircraft landings. ATCT, upon receipt of a nil braking action pilot report, will immediately cease all operations on the affected area and notify Airport Operations of the report and the location of the affected area. Airport Operations will immediately notify Airfield

Maintenance Foreman by radio or telephone of the condition report and its problem area. The runway will be closed by Airport Operations and/or Airfield Maintenance supervisory personnel until inspection and, if required, corrective action completed. If an inspection of the runway (utilizing the friction meter decelerometer) indicates a braking friction in excess of .20, the runway will immediately be reopened and ATCT and Airport Operations will be notified of current friction readings.

- If a friction test on a runway reveals a reading of .20 or less on the friction meter, the subject runway will be closed immediately by the Airfield Maintenance Foreman or Airport Operations and a NOTAM published. Expedient follow-up actions will be taken to return runway surface to an operational condition.

- If there is a disabled aircraft, equipment on runway or obstacles on a runway presenting a safety hazard the runway will be closed by Airport Operations or Airfield Maintenance and a NOTAM published. The runway will remain closed until the existing safety hazard is eliminated.

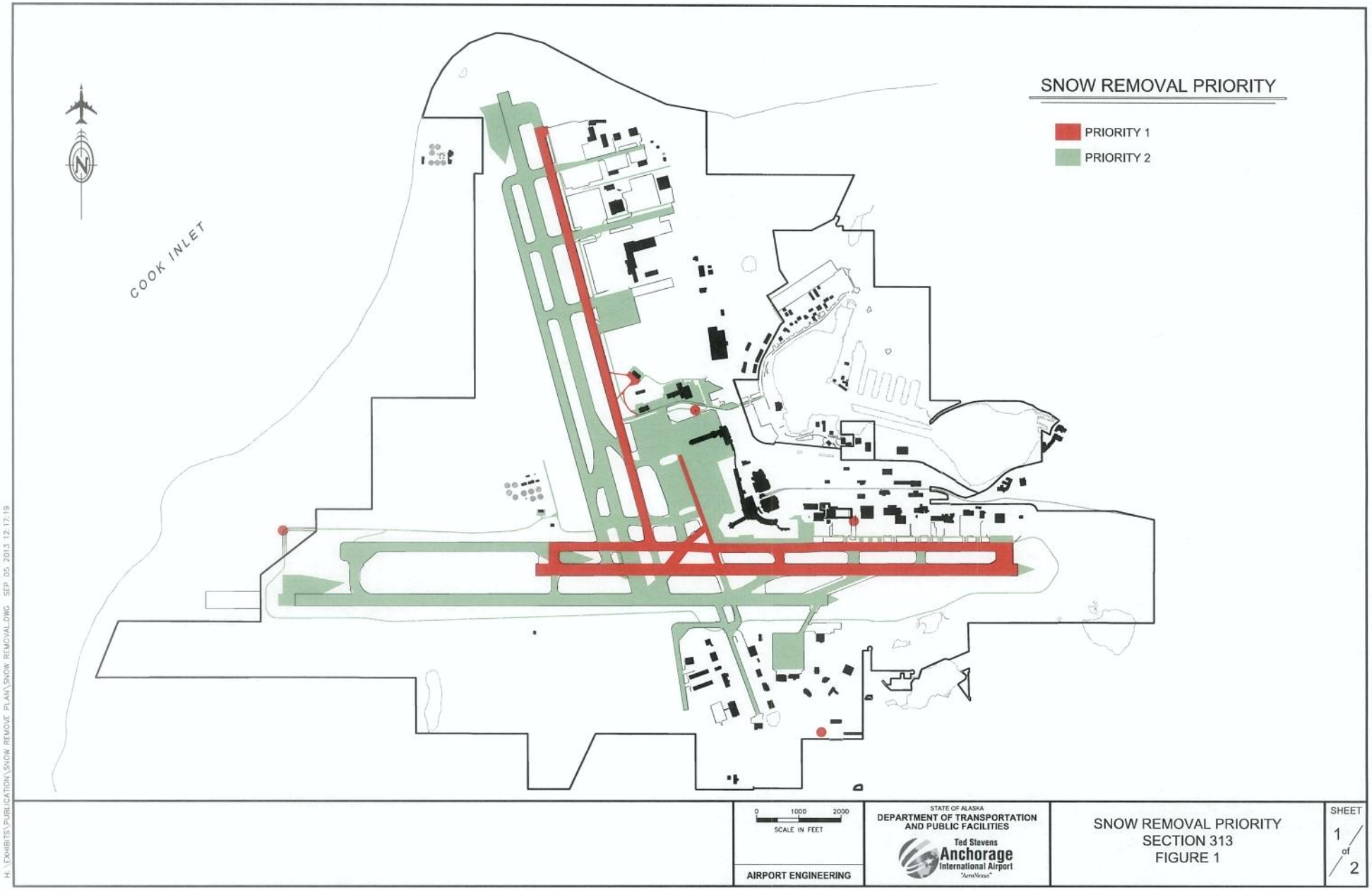
- A RwyCC value of 0 at any area of the runway

5.9 Continuous Monitoring and Deteriorating Conditions.

- Airport 10 and MX-1 will continuously monitor airfield conditions, local radar, weather patterns/predictions and ATCT radio traffic for pilot reports and breaking action reports to anticipate a need for snow removal operations. ANC also uses pavement sensors that are monitored by computer and ground temperature sensors in the MX-1 vehicles.

Monitoring begins when there is an ice or snow event that has been predicted. Any of the following conditions can trigger continuous monitoring but aren't limited to:

- Temperature change
- Precipitation
- Expected precipitation
- Impending weather events



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H:\EXHIBITS\PUBLICATION\SNOW REMOVE PLAN\SNOW DISPOSAL.DWG SEP 05 2013 12:19:35

0 1000 2000
SCALE IN FEET

FIELD MAINTENANCE

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
Ted Stevens Anchorage International Airport

SNOW DISPOSAL SITES
SECTION 313
FIGURE 2

SHEET 2 of 2

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EQUIPMENT LIST

FIGURE 3

PRIMARY EQUIPMENT				SECONDARY EQUIPMENT			
Type	**Year**	**Make**	**Model**	**Type**	**Year**	**Make**	**Model**
Broom 18	2007	MB	4600 CRDL	SUPER BROOM 8	2007	MB	4620 MP
Broom 19	2007	MB	4600 CRDL	SUPER BROOM 1	2009	MB	4620 MP
Broom 21	2008	MB	4600 CRDL	SUPER BROOM 11	2009	MB	4620 MP
Broom 22	2009	MB	4600 CRDL	SUPER BROOM 12	2009	MB	4620 MP
Broom 23	2010	MB	4600 CRDL				
Broom 24	2010	MB	4600 CRDL				
Broom 27	2011	MB	4600 CRDL				
Broom 25	2011	MB	4600 CRDL				
Broom 26	2011	MB	4600 CRDL				
Broom 20	2015	MB	4600 CRDL				
Broom 1	2015	MB	4600 CRDL				
Broom 2	2016	MB	4600 CRDL				
Broom 3	2016	MB	4600 CRDL				

PRIMARY EQUIPMENT				SECONDARY EQUIPMENT			
Type	**Year**	**Make**	**Model**	**Type**	**Year**	**Make**	**Model**
DEICE 2	1993	NAVISTAR	2000 GAL	DEICE 4	2010	HAGIE	2000 GAL
DEICE 3	2002	NAVISTAR	4000 GAL				
DEICE 5	2016	TYLER ICE	4000 GAL				

PRIMARY EQUIPMENT				SECONDARY EQUIPMENT			
Type	**Year**	**Make**	**Model**	**Type**	**Year**	**Make**	**Model**
DOZER 6	2012	CAT	D6	DOZER 4	1998	KOMATSU	D85
DOZER 7	2012	CAT	D7	DOZER 3	2014	CAT	D3

PRIMARY EQUIPMENT				SECONDARY EQUIPMENT			
Type	**Year**	**Make**	**Model**	**Type**	**Year**	**Make**	**Model**
DUMP TRUCK 11	2012	FREIGHTLINER	17 CY	DUMP TRUCK 3	1993	AUTOCAR	17 CY
DUMP TRUCK 12	2012	FREIGHTLINER	17 CY	DUMP TRUCK 1	2003	FREIGHTLINER	17 CY
DUMP TRUCK 13	2012	FREIGHTLINER	17 CY	DUMP TRUCK 2	2003	FREIGHTLINER	17 CY
TRACTOR 1	1993	AUTOCAR	ACL46	DUMP TRUCK 9	2009	INTERNATIONAL	17 CY
TRACTOR 6	1994	AUTOCAR	ACL46	DUMP TRUCK 10	2012	FREIGHTLINER	17 CY
TRACTOR 2	2013	FREIGHTLINER	114SD				
TRACTOR 3	2013	FREIGHTLINER	114SD				
TRACTOR 4	2016	MACK	GU713				

PRIMARY EQUIPMENT				SECONDARY EQUIPMENT			
Type	**Year**	**Make**	**Model**	**Type**	**Year**	**Make**	**Model**
GRADER 4	2003	CAT	14H	GRADER 10	2012	NORAM	65E
GRADER 5	2003	CAT	14H				
GRADER 2	2008	VOLVO	G990				
GRADER 1	2008	VOLVO	G990				
GRADER 9	2009	CAT	14M				
GRADER 8	2009	CAT	14M				
GRADER 6	2015	CAT	14M				
GRADER 3	2016	CAT	14M				

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PRIMARY EQUIPMENT

Type	Year	Make	Model
LOADER 8	2000	VOLVO	220
LOADER 2	2003	VOLVO	330E
LOADER 1	2003	VOLVO	330E
LOADER 3	2003	VOLVO	330E
LOADER 11	2008	VOLVO	220
LOADER 12	2009	KOMATSU	WA500
LOADER 5	2015	DEERE	744K
LOADER 4	2015	DEERE	744K
LOADER 6	2016	CAT	980M

SECONDARY EQUIPMENT

Type	Year	Make	Model
LOADER 9	2006	CASE	821 E
LOADER 10	2007	CASE	921E
LOADER 13	2010	CASE	821E
LOADER 15	2012	DEERE	324J
LOADER 14	2012	VOLVO	L60G
LOADER 16	2013	DEERE	324J

PRIMARY EQUIPMENT

Type	Year	Make	Model
PLOW TRUCK 14	2010	OSHKOSH	HT
PLOW TRUCK 15	2010	OSHKOSH	HT
PLOW TRUCK 13	2010	OSHKOSH	HT
PLOW TRUCK 17	2012	OSHKOSH	HT
PLOW TRUCK 16	2012	OSHKOSH	HT
PLOW TRUCK 18	2015	MB	MB2
PLOW TRUCK 6	2016	MB	MB2
PLOW TRUCK 7	2016	MB	MB2

SECONDARY EQUIPMENT

Type	Year	Make	Model
PLOW TRUCK 9	2007	OSHKOSH	HT
PLOW TRUCK 8	2007	OSHKOSH	HT
PLOW TRUCK 10	2008	OSHKOSH	HT
PLOW TRUCK 11	2008	OSHKOSH	HT
PLOW TRUCK 12	2008	OSHKOSH	HT

PRIMARY EQUIPMENT

Type	Year	Make	Model
SAND TRUCK 5	2007	INTERNATIONAL	8 YD
SAND TRUCK 6	2009	INTERNATIONAL	8 YD
SAND TRUCK 7	2009	INTERNATIONAL	8 YD
SAND TRUCK 2	2012	FREIGHTLINER	8 YD
SAND TRUCK 4	2012	FREIGHTLINER	8 YD
SAND TRUCK 1	2012	FREIGHTLINER	8 YD

SECONDARY EQUIPMENT

Type	Year	Make	Model
SAND TRUCK TLR	2002	SMITHCO	20 YD
SAND TRUCK 3	2005	INTERNATIONAL	8 YD

PRIMARY EQUIPMENT

Type	Year	Make	Model
BLOWER 8	2007	OSHKOSH	H
BLOWER 1	2007	OSHKOSH	H
BLOWER 10	2009	OSHKOSH	H
BLOWER 11	2009	OSHKOSH	H
BLOWER 12	2009	OSHKOSH	H
BLOWER 13	2013	WAUSAU	BAB
BLOWER 6	2015	MB	MB4
BLOWER 2	2016	MB	MB4
BLOWER 3	2016	MB	MB4

SECONDARY EQUIPMENT

Type	Year	Make	Model
BLOWER 7	2000	OSHKOSH	H
BLOWER 3	2015	MB	NORTH STAR

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FIGURE 4

Table 5-2. Runway Condition Assessment Matrix (RCAM) *(for Airport Operators' Use Only)*

Assessment Criteria		Downgrade Assessment Criteria		
Runway Condition Description	**Code**	**Mu (μ) [1]**	**Vehicle Deceleration or Directional Control Observation**	**Pilot Reported Braking Action**
• Dry	6		---	---
• Frost • Wet (Includes Damp and 1/8 inch depth or less of water) ***1/8 inch (3mm) depth or less of:*** • Slush • Dry Snow • Wet Snow	5	40 or Higher	Braking deceleration is normal for the wheel braking effort applied AND directional control is normal.	Good
5° F (-15°C) and Colder outside air temperature: • Compacted Snow	4	39 to 30	Braking deceleration OR directional control is between Good and Medium.	Good to Medium
• Slippery When Wet (wet runway) • Dry Snow or Wet Snow (Any depth) over Compacted Snow ***Greater than 1/8 inch (3mm) depth of:*** • Dry Snow • Wet Snow ***Warmer than 5° F (-15°C) outside air temperature:*** • Compacted Snow	3		Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced.	Medium
Greater than 1/8 (3mm) inch depth of: • Water • Slush	2	29 to 21	Braking deceleration OR directional control is between Medium and Poor.	Medium to Poor
• Ice [2]	1		Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced.	Poor
• Wet Ice [2] • Slush over Ice • Water over Compacted Snow [2] • Dry Snow or Wet Snow over Ice [2]	0	20 or Lower	Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain.	Nil

[1] The correlation of the Mu (μ) values with runway conditions and condition codes in the Matrix are only approximate ranges for a generic friction measuring device **and are intended to be used only to downgrade a runway condition code; with the exception of circumstances identified in Note 2.** Airport operators should use their best judgment when using friction measuring devices for downgrade assessments, including their experience with the specific measuring devices used.

[2] In some circumstances, these runway surface conditions may not be as slippery as the runway condition code assigned by the Matrix. The airport operator may issue a higher runway condition code (but no higher than code 3) for each third of the runway if the Mu value for that third of the runway is 40 or greater obtained by a properly operated and calibrated friction measuring device, **and all other observations, judgment, and vehicle braking action support the higher runway condition code. The decision to issue a higher runway condition code than would be called for by the Matrix cannot be based on Mu values alone; all available means of assessing runway slipperiness must be used and must support the higher runway condition code.** This ability to raise the reported runway condition code to a code 1, 2, or 3 can only be applied to those runway conditions listed under codes 0 and 1 in the Matrix.

The airport operator must also continually monitor the runway surface as long as the higher code is in effect to ensure that the runway surface condition does not deteriorate below the assigned code. The extent of monitoring must consider all variables that may affect the runway surface condition, including any precipitation conditions, changing temperatures, effects of wind, frequency of runway use, and type of aircraft using the runway. If sand or other approved runway treatments are used to satisfy the requirements for issuing this higher runway condition code, the continued monitoring program must confirm continued effectiveness of the treatment.

Caution: Temperatures near and above freezing (e.g., at 26.6° F (-3°C) and warmer) may cause contaminants to behave more slippery than indicated by the runway condition code given in the Matrix. At these temperatures, airport operators should exercise a heightened level of runway assessment, and should downgrade the runway condition code if appropriate.